

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend claims 1, 6, 11, 18 and 25-28, and add new claims 29-31 as follows:

Listing of Claims

1. (Currently Amended) A compression encoder which compresses input first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:
 - a dividing section which divides ~~[[the]]~~ each inputted first and second digital image signals into plural macro blocks of orthogonal-transformation blocks for each frame thereof;
 - a shuffling section which, for each of the first and second digital image signals, rearranges the macro blocks in each frame into groups ~~based on the frame rate~~ and creates macro block units for every group; and
 - a compression-encoding section which compression-encodes, based on the frame rate, each of the first and second ~~[[the]]~~ digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling section, wherein
- the shuffling section rearranges the macro blocks of the first digital image signals such that an output order of the macro block units of the first digital image signals after compression-encoding at the first frame rate is equivalent to the output order of the macro block units of the second digital image signals after compression-encoding at the second frame rate.
2. (Original) The compression encoder according to claim 1, wherein the shuffling section rearranges the divided macro blocks of the second digital image signals into a layout in

which the divided macro blocks of the second digital image signals are arranged mutually in a dispersed position.

3. (Original) The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the first digital image signals having a frame rate of 60 or 59.94 frames/second.

4. (Original) The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the digital image signals, based on a 4:2:2 format or 4:4:4 format.

5. (Original) The compression encoder according to claim 1, wherein the compression-encoding section compression-encodes the digital image signals according to an interlace format or a progressive format.

6. (Currently Amended) A compression-encoding method of compressing input first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

a dividing step of dividing ~~[[the]]~~ each inputted first and second digital image signals into plural macro blocks of orthogonal-transformation blocks for each frame thereof;

a shuffling step of for each of the first and second digital image signals, rearranging the macro blocks in each frame into groups ~~based on the frame rate~~ and creating macro block units for every group; and

a compression-encoding step of compression-encoding ~~[[the]]~~ , based on the frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling step, wherein

in the shuffling step, the macro blocks of the first digital image signals are rearranged such that an output order of the macro block units of the first digital image signals after compression-encoding at the first frame rate is equivalent to the output order of the macro block units of the second digital image signals after compression-encoding at a second frame rate.

7. (Original) The compression-encoding method according to claim 6, wherein in the shuffling step, the divided macro blocks of the second digital image signals are rearranged into a layout in which the divided macro blocks of the second digital image signals are arranged mutually in a dispersed position.

8. (Original) The compression encoding method according to claim 6, wherein in the compression-encoding step, the first digital image signals having a frame rate of 60 or 59.94 frames/second are compression-encoded.

9. (Original) The compression-encoding method according to claim 6, wherein in the compression-encoding step, the digital image signals are compression-encoded, based on a 4:2:2 format or 4:4:4 format.

10. (Original) The compression-encoding method according to claim 6, wherein in the compression-encoding step, the digital image signals are compression-encoded, according to

an interlace format or a progressive format.

11. (Currently Amended) A recorder which compresses input first and second digital image signals having frame rates different from each other, based on a same encoding system, and records the digital image signals compressed, onto a recording medium, comprising:

a dividing section which divides ~~[[the]]~~ each inputted first and second digital image signals into plural macro blocks of orthogonal-transformation blocks for each frame thereof;

a shuffling section which, for each of the first and second digital image signals, rearranges the macro blocks in each frame into groups ~~based on the frame rate~~ and creates macro block units for every group each including plural macro blocks;

a compression-encoding section which compression-encodes, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling section; and

a recording section which records the digital image signals compression-encoded by the compression-encoding section, ~~assigning the digital image signals to each track of the recording medium, for every~~ in units of a macro block unit by assigning half the macro block units to first tracks of a record medium and remaining macro block units to last tracks of the recording medium,

wherein the shuffling section rearranges the macro blocks of the first digital image signals such that an output order of the macro block units of the first digital image signals after compression-encoding at a first frame rate is equivalent to the output order of the macro block units of the second digital image signals after compression-encoding at a second frame rate.

12. (Original) The recorder according to claim 11, wherein the shuffling section forms the macro block units each of those plural macro blocks that are divided by the dividing section and discretely exist in a frame.

13. (Original) The recorder according to claim 12, wherein the recording section selects one or more macro block units to be assigned to each track of the recording medium.

14. (Original) The recorder according to claim 12, wherein the recording section assigns the macro block units to each track of the recording medium, positioning discretely those macro blocks that are divided by the dividing section and are adjacent to each other.

15. (Original) The recorder according to claim 11, wherein the compression-encoding section compression-encodes the first digital image signals having a frame rate of 60 or 59.94 frames/second.

16. (Original) The recorder according to claim 11, wherein the compression-encoding section compression-encodes the digital image signals, based on a 4:2:2 format or 4:4:4 format.

17. (Original) The recorder according to claim 11, wherein the compression-encoding section compression-encodes the digital image signals according to an interlace format or a progressive format.

18. (Currently Amended) A recording method of compressing input first and second

digital image signals having frame rates different from each other, based on a same encoding system, and recording the digital image signals compressed, onto a recording medium, comprising:

a dividing step of dividing ~~[[the]]~~ each inputted first and second digital image signals into plural macro blocks of orthogonal-transformation blocks for each frame thereof;

a shuffling step of, for each of the first and second digital image signals, rearranging the macro blocks in each frame into groups ~~based on the frame rate~~ and creating macro block units for every group each including plural macro blocks;

a compression-encoding step of compression-encoding, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling step; and

a recording step of recording the digital image signals compression-encoded by the compression-encoding step, ~~assigning the digital image signals to each track of the recording medium, for every~~ in units of a macro block unit by assigning half the macro block units to first tracks of a record medium and remaining macro block units to last tracks of the recording medium,

wherein the shuffling step rearranges the macro blocks of the first digital image signals such that an output order of the macro block units of the first digital image signals after compression-encoding at a first frame rate is equivalent to the output order of the macro block units of the second digital image signals after compression-encoding at a second frame rate.

19. (Original) The recording method according to claim 18, wherein in the shuffling step, the macro block units are each formed of those plural macro blocks that are divided by the

dividing step and discretely exist in a frame.

20. (Original) The recording method according to claim 19, wherein in the recording step, one or more macro block units to be assigned to each track of the recording medium are selected.

21. (Original) The recording method according to claim 19, wherein in the recording step, the macro block units are assigned to each track of the recording medium, positioning discretely those macro blocks that are divided by the dividing step and are adjacent to each other.

22. (Original) The recording method according to claim 18, wherein in the compression-encoding step, the first digital image signals having a frame rate of 60 or 59.94 frames/second are compression-encoded.

23. (Original) The recording method according to claim 18, wherein in the compression-encoding step, the digital image signals are compression-encoded, based on a 4:2:2 format or 4:4:4 format.

24. (Original) The recording method according to claim 18, wherein in the compression-encoding step, the digital image signals according to an interlace format or a progressive format are compression-encoded.

25. (Currently Amended) A compression encoder which compresses first and second

digital image signals having frame rates different from each other, based on a same encoding system, comprising:

a dividing section which divides the first digital image signals into plural macro blocks for each frame ~~as well as~~ and which divides the second digital image signals into plural macro blocks for each frame;

a shuffling section which rearranges the plural macro blocks in each frame of the second digital image signals into groups ~~based on frame rate~~ and creates macro block units for every group wherein the second digital image signals are rearranged into a layout of macro blocks units after compression encoding at a second frame rate which is equivalent to that of the first digital image signals after compression encoding at a first frame rate; and

a compression-encoding section which compression-encodes, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling section.

26. (Currently Amended) A compression-encoding method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, comprising:

a dividing step of dividing the first digital image signals into plural macro blocks for each frame ~~as well as~~ and dividing the second digital image signals into plural macro blocks for each frame;

a shuffling step of rearranging the plural macro blocks in each frame of the second digital image signals into groups ~~based on frame rate~~ and creates macro block units for every group, wherein the second digital image signals are rearranged into a layout of macro blocks units after

compression-encoding at a second frame rate which is equivalent to that of the first digital image signals after compression encoding at a first frame rate; and

a compression-encoding step of compression-encoding, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling step.

27. (Currently Amended) A recorder which compresses first and second digital image signals having frame rates different-from each other, based on a same encoding system, and records the digital image signals compressed, onto a recording medium, comprising:

a dividing section which divides the first digital image signals into plural macro blocks for each frame ~~as well as~~ and which divides the second digital image signals into plural macro blocks for each frame;

a shuffling section which rearranges the plural macro blocks in each frame of the second digital image signals into groups ~~based on frame rate~~ and creates macro block units for every group each including plural macro blocks, wherein the second digital image signals are rearranged into a layout of macro blocks units after compression-encoding at a second frame rate which is equivalent to that of the first digital image signals after compression-encoding at a first frame rate;

a compression-encoding section which compression-encodes, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling section; and

a recording section which records the digital image signals, ~~assigning the digital image signals to tracks of the recording medium, for every~~ in units of macro block unit by assigning

half the macro block units to first tracks of a record medium and remaining macro block units to last tracks of the recording medium.

28. (Currently Amended) A recording method of compressing first and second digital image signals having frame rates different from each other, based on a same encoding system, and recording the digital image signals compressed, onto a recording medium, comprising:

a dividing step of dividing the first digital image signals into plural macro blocks for each frame ~~as well as~~ and dividing the second digital image signals into plural macro blocks for each frame;

a shuffling step of rearranging the plural macro blocks in each frame of the second digital image signals into groups ~~based on frame rate~~ and creating macro block units for each group each including plural macro blocks, wherein the second digital image signals are rearranged into a layout of macro blocks units after compression-encoding at a second frame rate which is equivalent to that of the first digital image signals after compression-encoding at a first frame rate;

a compression-encoding step of compression-encoding, based on frame rate, each of the first and second digital image signals for every macro block unit consisting of plural macro blocks rearranged by the shuffling step; and

a recording step of recording the digital image signals, ~~assigning the digital image signals to tracks of the recording medium, for every~~ in units of macro block unit by assigning half the macro block units to first tracks of a record medium and remaining macro block units to last tracks of the recording medium.

29. (New) The compression encoder according to claim 1, wherein a number of encoders compression-encoding the first digital image signal being different from a number of encoders compression-encoding the second digital image signal.

30. (New) The compression encoder according to claim 1, wherein macro block units are constituted by macro blocks that are not adjacent to each other but exist discretely in a same frame.

31. (New) The compression encoder according to claim 1, wherein half of the macro block units are recorded onto a beginning tracks of a recording medium and a remaining half of the macro block units are recorded onto ending tracks of the recording medium.